

Opposing Views

Attachment #2

**The Following Compelling, Indisputable
Science Authored by Experts Reveals
Post-Fire Logging Will Inflict Major, Tragic
Damage to the Natural Resources in and
Downstream from the Burned Landscape ...
Especially Wildlife and Aquatic Resources.**

Fire that does not threaten homes in the Wildland Urban Interface is a welcome event rather than a “catastrophe” used by the USFS to describe such a fire. Dead and dying trees resulting from wildfire are supposed to rot and decay in order to replenish the organic material in the soil. Dead and dying trees resulting from wildfire provide unique wildlife habitat available only after a fire. Human manipulation destroys these benefits. Indeed, there is a reason fire comes from the sky during the hottest, least humid time of the year.

The experts’ statements below are clear and to the point. USFS employees are taught by the agency that post-fire logging is necessary to maintain the lumber value before the trees deteriorate. If forest ecosystem health is the goal the trees would be left on-site rather than removed to provide corporate profit opportunities. A few USFS specialists understand this ... yet they choose to play the game to avoid jeopardizing their jobs. A real, competent professional would know what to do and not to do.

The following “Opposing Views” present scientific information that disproves the USFS claim that post-fire logging is mandatory to capture the lumber value of the dead and dying trees. These

“Opposing Views” are subject to 40 CFR 1502.9(b). The views are not irresponsible and they weren’t adequately discussed or considered in this NEPA document.

FS Response to this document as a whole: Most of the links contained in this document outline why salvage logging is not beneficial to recovery in the forest. It should be noted that the purpose of this project (EA at 1-4) *“The purpose of the Chetco Bar Fire Salvage project is to capture timber value in the matrix land allocations by harvesting dead, dying and/or damaged trees resulting from the 2017 Chetco Bar fire.*

Timber would be harvested following standards and guidelines outlined in the Siskiyou National Forest Plan as amended by the Northwest Forest Plan. This project would salvage fire-killed or dying trees **to provide timber to local mills and economies. Dead or dying trees would be salvaged in areas where operations are economically feasible while considering potential impacts to sensitive resources and values.** The timber value would be prioritized and captured using a salvage prescription as determined by a certified silviculturist.” Emphasis added.

EA at 1-5 “The Record of Decision (ROD) for the Siskiyou National Forest Land and Resource Management Plan (LRMP) states that the Forest-wide goal is to “Provide a balance of resource management that will maintain a healthy Forest ecosystem, and help to supply local, regional and National social economic needs” (LRMP ROD page 10) and identifies salvage as an acceptable method for timber harvest (LRMP ROD page 21). The Forest Plan identifies the goal in MA-14 General Forest is to obtain a full yield of timber within the capability of the land (Forest Plan IV-139).

Standards and guidelines in the Northwest Forest Plan (NWFP) states objectives for each allocation. The matrix consists of those federal lands outside the six categories of designated areas (Congressionally Reserved Areas, Late-Successional Reserves, Adaptive Management Areas, Managed Late-Successional Areas, Administratively Withdrawn Areas, and Riparian Reserves). Most scheduled timber harvest takes place in the matrix. Standards and guidelines assure appropriate conservation of ecosystems as well as provide habitat for rare and lesser-known species."

It should also be noted that salvage logging is not proposed on the entire burn area. Only those matrix areas (described above) that burned 50-100% basal area loss and are economically viable would be harvested. Not every acre that falls in that matrix land that burned 50-100% basal area loss would be salvaged either. (13,626 acres)

Post Wildfire Logging Opposing View - “Burned forests are not dead zones, but rather teem with life . The reflex reaction to log after forest fires directly contradicts decades of scientific research showing both the immense ecological importance of post-fire landscapes and the significant harm that can occur when such areas are logged. Forest fires like the Rim fire are essential to maintain biological diversity in the Sierra’s ecosystems, and burned and dead trees provide critical habitat to numerous wildlife species.” (pg 2)

Nourished by Wildfire

By the Center for Biological Diversity and the John Muir Project • January 2014

http://www.biologicaldiversity.org/species/birds/black-backed_woodpecker/pdfs/Nourished_by_Wildfire.pdf

FS Response: Salvage harvest activity would take place on approximately 2% in the fire perimeter on Forest Service land, leaving areas for blacked backed woodpeckers to forage.

Post Wildfire Logging Opposing View - "It is reported in the scientific literature that fire enhances nutrient cycling, improves the digestibility of forage/browse, increases the crude protein content of forage/browse and increases the long-term biomass production of forage and browse. Fire improves nutrition which leads to sustainable and resilient wildlife populations. In BC you can't have robust wildlife populations without fire. One study in northern BC reported that Stone's Sheep that have access to significant portions of burned habitat had higher lamb to ewe ratios and lower incidence of lungworm than herds that did not have access to burned habitat."

"Fire suppression and post-fire salvage logging have negative implications for the species yet BC has not identified this woodpecker as a species of concern to be considered in how much of a burned forest should be logged. However, over the next few years in the United States, the potential listing of the black-backed woodpecker may lead to federal legal challenges when lumber companies plan to clearcut forests burned by wildfires."

Salvage Logging British Columbia's Wildfires – Will Wildlife Conservation and Science Matter?

By Mark LR Hall

Published by HC Hunter Conservationist, September 14, 2017

<http://hunterconservationist.ca/salvage-logging-british-columbias-wildfires-will-wildlife-conservation-and-science-matter/>

FS Response: This project has an extensive list (Appendix A) of project design criteria that would reduce or eliminate those effects outlined in the article. Additionally, the proposed action focuses on areas in matrix land allocations (suitable for timber harvest) (approximately 25,386 matrix acres within the project area) and further refined to only those acres which endured approximately 50-100 percent basal area loss. Further analysis refined the proposed action acres to 4,090 by "*removing units lacking economically viable products, logging systems operability and accessibility, locating and avoiding unmapped riparian reserves, and considerations for post-fire wildlife habitat and other resources.*" (EA at 1-1) The proposed action could potentially affect about 16% of the matrix lands within the project boundary, and could affect 30% of the matrix lands that fell into the 50-100 percent basal area loss. On a larger scale, the proposed action would affect only 2% within the fire perimeter that overlaps with Forest Service land.

Post Wildfire Logging Opposing View - “The science over the past two decades has been clear: salvage logging is risky for our natural systems and delays or even prevents ecosystem recovery. Fire salvage logging increases soil compaction, increases erosion and losses of organic matter (with effects on both plants and streams) and decreases the landscape water-holding capacity, potentially leading to larger floods and increased surface run off. The less logging after a fire, the better for our natural ecosystems.”

“In fire-dependent ecosystems like much of the Kootenays, fires rejuvenate important wildlife habitat for elk, deer and bighorn sheep. Fires at mid and high elevations create ideal conditions for huckleberries, an important food for bears and many other species.”

SALVAGE LOGGING AFTER THE FIRES: ECOSYSTEMS IN DANGER

Aired by BCTV news, September 26, 2017

<http://bctvkootenays.com/2017/09/26/salvage-logging-ecosystems-in-danger/>

FS Response: This article outlines how to responsibly salvage log, and reads like the proposed action for this project. Thank you for your comment.

Post Wildfire Logging Opposing View - “The science over the past two decades has been clear: salvage logging is risky for our natural systems and delays or even prevents ecosystem recovery. Fire salvage logging increases soil compaction, increases erosion and losses of organic matter (with effects on both plants and streams) and decreases the landscape water-holding capacity, potentially leading to larger floods and increased surface run off. The less logging after a fire, the better for our natural ecosystems.”

“Our native plant communities have evolved to regenerate after fires. Standing dead trees continue to provide cover and habitat for wildlife, shade for regrowth of plant communities and help keep streams cool for our native fish. Green tree patches left after fires skip across the landscape, are not just important as wildlife habitat, but also as seed sources and for the complexity of the rejuvenating landscape.”

FIRE SALVAGE LOGGING: OUR ECOSYSTEMS IN DANGER

Posted on Tuesday, October 3, 2017 by John Bergenske

<http://wildsight.ca/blog/2017/10/03/fire-salvage-logging-our-ecosystems-in-danger/>

FS Response: Opinion, no response needed.

Post Wildfire Logging Opposing View - “WASHINGTON— The Forest Service is proposing to log 661 million board feet of timber in the area burned by the Rim fire last summer in California’s Stanislaus National Forest. The new proposal, issued as part of a draft environmental impact statement, would sell almost four times the timber volume sold by the Forest Service in the entire state of California in 2013. It would ignore longstanding rules protecting old-growth trees and destroy habitat for roughly 60 percent of imperiled [black-backed woodpeckers](#).

“This timber sale will be incredibly destructive,” said Randi Spivak of the Center for Biological Diversity. “The logging will hurt watersheds and wildlife and even increase the risk of unnatural fires by spreading invasive species. It’s little more than an excuse to cut old trees in forests that would otherwise be protected.”

Decades of science have shown the importance of preserving burned areas for wildlife like black-backed woodpeckers and the function of these complex ecosystems,” Spivak said. “Throwing that away to make the timber industry happy is shortsighted.” “

“By the Forest Service’s own admission, its proposal would harm rare wildlife. Post-fire species like rare black-backed woodpeckers depend on intensely burned forests to nest and forage for food such as insects that initiate nature’s recycling of the burned trees. The shrubs and plants that begin to grow also provide food and cover for an abundance of birds and pollinators; they provide nutrients like nitrogen to the soil for the regrowing forests. The Forest Service’s proposed action would destroy the homes of about 60 percent of black-backed woodpecker families.”

Forest Service Proposes Massive Salvage Logging Project in Rim Fire Area

Published by the Center for Biological Diversity, May 19, 2014

http://www.biologicaldiversity.org/news/press_releases/2014/rim-fire-logging-05-19-2014.html

FS Response: Salvage harvest activity would take place on approximately 2% in the fire perimeter on Forest Service land, leaving areas for blacked backed woodpeckers to forage.

Post Wildfire Logging Opposing View – “A burned area may be the most ecologically sensitive place for logging, said Dr. Richard Hutto, professor and director of the Avian Science Center at the University of Montana. “We talk about forest restoration after a fire, but it just got restored by fire itself,” he said. “That’s what fire does.” “

<http://cyberwest.com/post-forest-fire-salvage-logging/>

FS Response: This project has an extensive list (Appendix A) of project design criteria that would reduce or eliminate those effects outlined in the article. Additionally, the proposed action focuses on areas in matrix land allocations (suitable for timber harvest) (approximately 25,386 matrix acres within the project area) and further refined to only those acres which endured approximately 50-100 percent basal area loss. Further analysis refined the proposed action acres to 4,090 by "*removing units lacking economically viable products, logging systems operability and accessibility, locating and avoiding unmapped riparian reserves, and considerations for post-fire wildlife habitat and other resources.*" (EA at 1-1) The proposed action could potentially affect about 16% of the matrix lands within the project boundary, and could affect 30% of the matrix lands that fell into the 50-100 percent basal area loss. On a larger scale, the proposed action would affect only 2% within the fire perimeter that overlaps with Forest Service land.

Post Wildfire Logging Opposing View –“The science over the past two decades has been clear: Salvage logging is risky for our natural systems and delays or even prevents ecosystem recovery. Fire-salvage logging increases soil compaction, increases erosion and losses of organic matter (with effects on both plants and streams) and decreases the landscape water-holding capacity, potentially leading to larger floods and increased surface runoff. The less logging after a fire, the better for our natural ecosystems.”

<http://www.timescolonist.com/opinion/op-ed/comment-salvage-logging-can-be-risky-for-environment-1.23051292>

FS Response: This article outlines how to responsibly salvage log, and reads like the proposed action for this project. Thank you for your comment.

Post Wildfire Logging Opposing View - “With respect to birds, the effects of postfire salvage harvesting are uniformly negative. In fact, most timber-drilling and timber-gleaning bird species disappear altogether if a forest is salvage-logged. Therefore, such places are arguably the last places we should be going for our wood.”

<https://www.counterpunch.org/2008/07/19/the-ecology-of-severely-burned-forests/>

FS Response: This project has an extensive list (Appendix A) of project design criteria that would reduce or eliminate those effects outlined in the article. Additionally, the proposed action focuses on areas in matrix land allocations (suitable for timber harvest) (approximately 25,386 matrix acres within the project area) and further refined to only those acres which endured approximately 50-100 percent basal area loss. Further analysis refined the proposed action acres to 4,090 by "*removing units lacking economically viable products, logging systems operability and accessibility, locating and avoiding unmapped riparian reserves, and considerations for post-fire wildlife habitat and other resources.*" (EA at 1-1) The proposed action could potentially affect about 16% of the matrix lands within the project boundary, and could affect 30% of the matrix lands that fell into the 50-100 percent basal area loss. On a larger scale, the proposed action would affect only 2% within the fire perimeter that overlaps with Forest Service land.

Post Wildfire Logging Opposing View - “It’s easy to assume that since the forest burned it no longer has any ecological value and is only good for salvage logging. But nothing could be further from the truth. To begin with, science long ago dispelled the myth that a burned forest is dead. In fact, areas of burnt forest habitat are ecological treasures, not catastrophes, and are actually critical for many native wildlife species such as the rare black-backed woodpecker to survive.

Post-fire habitat, known as ‘complex early seral forest,’ is some of the best wildlife habitat in forests. And while it’s an essential stage of natural forest processes — since some trees such as lodgepole pine will not release their seeds unless they burn — it is among the least protected of all forest habitat types due to environmentally destructive post-fire logging.

Numerous scientific studies document the destructive cumulative impacts of post-fire logging. Those impacts include the elimination of bird species that are most dependent on post-fire habitat, compaction of soils, elimination of snags and downed logs that are essential in supporting new forest growth, spread of noxious weeds, accumulation of logging slash that can add to future fire risks, and increased and on-going sedimentation in streams due to the runoff from both the logging operations and the extensive road network they require.”

<https://www.counterpunch.org/2017/10/11/a-burnt-forest-is-a-rare-ecological-treasure/>

FS Response: The Forest Service acknowledges the ecological diversity present in severely burned stands post fire. As such, this project is proposed to only harvest at most under the proposed action 4090 acres out of the 170,321 acres that burned on Forest Service land. In addition to that, those acres that are proposed for harvest, there are extensive design criteria (Appendix A of the EA) that would mitigate negative effects to resources. Chapter 3 of the EA discuss the effects to all resources.

Post Wildfire Logging Opposing View - “With respect to birds, the effects of postfire salvage harvesting are uniformly negative. In fact, most timber-drilling and timber-gleaning bird species disappear altogether if a forest is salvage-logged. Therefore, such places are arguably the last places we should be going for our wood.

We need to change our thinking when it comes to logging after forest fires. There is potential economic value in the timber, yes, but there are numerous other values in a burned forest. And the prospect of losing those values must be weighed against the potential economic gain that may accompany postfire timber harvest. Burned areas are probably the most ecologically sensitive places from which we might extract trees.”

Hutto, Richard Ph.D., **The Ecology of Severely Burned Forests**

Published online by *Counterpunch*, July 2008

<http://www.counterpunch.org/2008/07/19/the-ecology-of-severely-burned-forests/>

FS Response: Same link as 2 above.

Post Wildfire Logging Opposing View - “Although logging and replanting may seem like a reasonable way to clean up and restore forests after disturbances like wildland fires, such activity would actually slow the natural recovery of forests and of streams and creatures within them. Many scientist-reviewed studies and syntheses (please see the selected citations appended to this letter) have recently come to this conclusion. For example, no substantive evidence supports the idea that fire-adapted forests might be improved by logging after a fire. In fact, many carefully conducted studies have concluded just the opposite. Most plants and animals in these forests are adapted to periodic fires and other natural disturbances. They have a remarkable way of recovering-literally rising from the ashes because they have evolved with and even depend upon fire.”

A 2004 letter to Congress regarding HR4200

By: Karr, James R. Ph.D., Reed Noss, Ph.D., Jon Rhodes, Tania Schoennagel, Ph.D., and Dominick A. DellaSala, Ph.D.

<http://earthjustice.org/sites/default/files/library/signon/letter-from-over-540-scientists.pdf>

FS Response: This is a letter to congress in support of a bill that did not pass. Not relevant.

Post Wildfire Logging Opposing View - “In recent post-fire logging litigation, there have been at least four common themes. First, the Forest Service routinely attempts to expedite the logging process as soon as possible. However, these attempts have been largely unsuccessful, and as a result, the Forest Service recently changed rules to allow for more flexibility. Second, the Forest Service has been largely unwilling to disclose or address the available scientific evidence that cautions against logging after severe wildfires. Third, the Forest Service has failed, thus far, to account for the substantial environmental impacts of its previous firefighting activities within the proposed areas.” (page 201)

“Along with the Forest Service’s attempts to expedite the administrative process for post-fire logging projects, the most common theme in post-fire timber sale cases has been the Forest Service’s unwillingness to disclose and address unfavorable science in EAs and EISs for the logging proposals.” (page 212)

“Despite recent setbacks in court, the Forest Service shows no signs of insulating itself from the controversies surrounding post-fire logging of national forests. To the contrary, the Forest Service has significantly increased the number and size of post-fire logging proposals.” (page 220)

“Logging After Wildfire: Salvaging Economic Value or Mugging a Burn Victim?”

Author: Marc Fink

The author is an attorney with the Western Environmental Law Center and has litigated a number of post-fire logging cases.

Published in the *Journal of Environmental Law and Litigation*, Volume 19, 2004

<https://scholarsbank.uoregon.edu/xmlui/bitstream/handle/1794/3844/fink.pdf;sequence=1>

FS Response: Paper outlining the policies of the Forest Service in post-fire salvage. The Chetco Bar Fire Salvage Project EA describes the effects to all resources. Also refer to the above responses regarding scale of treatments compared to size of fire perimeter.

Post Wildfire Logging Opposing View - “We investigated the effects of postfire salvage logging on cavity-nesting birds by comparing nest densities and patterns of nest

reuse over a three-year period in seven logged and eight unlogged patches of mixed-conifer forest in the Blackfoot-Clearwater Wildlife Management Area, Montana. We found 563 active nests of 18 cavity-nesting birds; all species were found nesting in the uncut burned forest plots, but only eight nested in the salvage-logged plots. All except one species nested at a higher density in the unlogged areas, and half of the species were significantly more abundant in the unlogged plots. Every timber-drilling and timber-gleaning species was less abundant in the salvage-logged plots, including two of the most fire-dependent species in the northern Rocky Mountains—American Three-toed (*Picoides dorsalis*) and Black-backed (*P. arcticus*) Woodpeckers. Lower abundances in salvage-logged plots occurred despite the fact that there were still more potential nest snags per hectare than the recommended minimum number needed to support maximum densities of primary cavity-nesters, which suggests that reduced woodpecker densities are more related to a reduction in food (wood-boring beetle larvae) than to nest-site availability. Because cavities were present in only four of 244 randomly selected trees, and because frequency of cavity reuse by secondary cavity-nesters was higher in salvage-logged than in unlogged plots, nest-site limitation may be a more important constraint for secondary cavity-nesters in salvage-logged areas. These results suggest that typical salvage logging operations are incompatible with the maintenance of endemic levels of most cavity-nesting bird populations, especially populations of primary cavity-nesting species.”

Hutto, Richard J. Ph.D. and Susan M. Gallo

The Effects of Postfire Salvage Logging on Cavity Nesting Birds

The Condor 108(4):817-831. 2006

[http://www.bioone.org/doi/abs/10.1650/0010-5422\(2006\)108%5B817:TEOPSL%5D2.0.CO%3B2](http://www.bioone.org/doi/abs/10.1650/0010-5422(2006)108%5B817:TEOPSL%5D2.0.CO%3B2)

FS Response: Salvage harvest activity would take place on approximately 2% in the fire perimeter on Forest Service land, leaving areas for cavity nesting birds to forage and nest.

Post Wildfire Logging Opposing View – “All that was left in the hottest burn zones was a silent swath of blackened trees and ash-covered ground.

Federal foresters decided the towering ponderosa pines would never return and declared the area dead - the first step in a process to allow timber companies to harvest trees on public land that would otherwise be off-limits.

But a growing body of fire research indicates that the federal salvage strategy creates more problems than it solves by stunting tree regrowth, denying habitat to a variety of species and increasing the risk of erosion.”

“Since the 1800s, U.S. forest policy has been to remove dead trees before they fall or burn again, and quickly replant the area, providing new timber.

But that method relies on only superficial interpretations of a burned tree. Hanson, who earned a doctorate in wildfire ecology, instead sees a breeding ground for dozens of species and a future for the forest.”

“Nature replants its own burned forests, contend some ecologists”

Published in the *Lewiston Morning Tribune*, September 28, 2015

http://lmtribune.com/editors_pick/nature-replants-its-own-burned-forests-contend-some-ecologists/article_b02154cc-f18e-580e-8deb-110d842acc7c.html

FS Response: Paper outlining the policies of the Forest Service in post-fire salvage. The Chetco Bar Fire Salvage Project EA describes the effects to all resources. Also refer to the above responses regarding scale of treatments compared to size of fire perimeter.

Post Wildfire Logging Opposing View - “Notably, the Administration’s wildland fire policy does not rely on commercial logging or new road building to reduce fire risks and can be implemented under its current forest and land management policies. The removal of large, merchantable trees from forests does not reduce fire risk and may, in fact, increase such risk. Fire ecologists note that large trees are “insurance for the future – they are critical to ecosystem resilience.”¹⁰ Targeting smaller trees and leaving both large trees and snags standing addresses the core of the fuels problem.”¹¹

The Congressional Research Service (CRS) recently addressed the effect of logging on wildfires in an August 2000 report and found that the current wave of forest fires is not related to a decline in timber harvest on Federal lands. From a quantitative perspective, the CRS study indicates a very weak relationship between acres logged and the extent and severity of forest fires. To the contrary, in the most recent period (1980 through 1999) the data indicate that fewer acres burned in areas where logging activity was limited.”

Babbitt, Bruce (DOI Secretary) and Dan Glickman (USDA Secretary)

“A Report to the President in Response to the Wildfires of 2000”

September 8, 2000

<https://www.frames.gov/catalog/6269>

FS Response: The report outlines ways to reduce and mitigate fire risk. This is a post-fire salvage project.

Post Wildfire Logging Opposing View - "Smokey the Bear's "Only you can prevent forest fires" mantra has been a very successful public relations campaign. However well intended, the program was ignorant of fire ecology. The mere possibility that fire has an important positive role in maintaining healthy forests was anathema to and censored by Forest Service leaders. It was only after the conversion of surplus war bombers (B17's and 24's) that fire fighters attacked remote areas-no longer constrained by roads of mule trains. For decades its official policy toward newly ignited fires was "out by 10 a.m. the next day". By an amazing coincidence, the policy ended when Congress repealed the emergency fire suppression fund in the mid-1980s."

Baden, John A. Ph.D. and Pete Geddes

"The Political Economy of Wildfires"

Published by Free, June 08, 2000

<http://www.free-eco.org/insights/article/political-economy-wildfires>

FS Response: Opinion, no detailed response warranted.

Post Wildfire Logging Opposing View - "With respect to the need for management treatments after fires, there is generally no need for urgency, nor is there a universal, ecologically-based need to act at all. By acting quickly, we run the risk of creating new problems before we solve the old ones. Ecologically speaking, fires do not require a rapid human response. We should not talk about a "fire crisis" but rather of managing the landscape with the anticipation that fire will eventually occur. Given the high degree of variability and high uncertainty about the impacts of post-fire responses, a conservative approach is warranted, particularly on sites susceptible to on-site erosion."

Beschta, Robert L. Ph.D., Christopher A. Frissell Ph.D.,

Robert Gresswell Ph.D., Richard Hauer Ph.D., James R Karr Ph.D.,

G. Wayne Minshall Ph.D., David A. Perry Ph.D. and Jonathan J. Rhodes

1995 **"Wildfire and Salvage Logging"**

<http://www.saveamericasforests.org/congress/Fire/Beschta-report.htm>

FS Response: This article outlines how to responsibly salvage log, and reads like the proposed action for this project. Thank you for your comment.

Post Wildfire Logging Opposing View - “The following practices are generally inconsistent with efforts to restore ecosystem functions after fire: seeding exotic species, livestock grazing, placement of physical structures in and near stream channels, ground-based postfire logging, removal of large trees, and road construction. Practices that adversely affect soil integrity, persistence or recovery of native species, riparian functions, or water quality generally impede ecological recovery after fire.”

Beschta, R.L. Ph.D., J.J. Rhodes, J.B. Kauffman Ph.D.
R.E. Gresswell Ph.D., G.W. Minshall Ph.D., J.R. Karr Ph.D.
D.A. Perry Ph.D., F.R. Hauer Ph.D., and C.A. Frissell

2004 “**Postfire Management on Forested Public Lands of the Western United States**”

Conservation Biology 18(4): 957–96

<http://fes.forestry.oregonstate.edu/sites/fes.forestry.oregonstate.edu/files/PDFs/Beschta/postfire.pdf>

FS Response: This article outlines how to responsibly salvage log, and reads like the proposed action for this project. Thank you for your comment.

Post Wildfire Logging Opposing View - “A recent report released by the American Lands Alliance has questioned whether logging trees in areas that have experienced wildfire is sound forest practice. ALA says in most cases burned forests should be left to recover naturally to preserve animal habitats, water sources and trees left behind from the fire.”

“Foresters, however, believe the benefits of logging burned areas include taking dead trees that would otherwise rot, and careful restoration techniques that are part of after-the-fire logging.”

“The report says, “Logging after fires degrades soils, produces sediment endangering aquatic species and water quality, increases fire risks, and destroys terrestrial wildlife habitat. Consequently, logging after fires should not be thought of as restoration.” “

Boerger, Paul “**After the Fire - To log or Not to Log**”

Mt Shasta Herald, December 2, 2005

<http://www.klamathforestalliance.org/Newsarticles/newsarticle20051201.html>

Opinion: Don't Log Burned Forests—Let Nature Heal Them

By Kenneth Brower

Published by National Geographic, July 13, 2014

<https://news.nationalgeographic.com/news/2014/07/140714-rim-fire-salvage-logging-forest-ecology-wildfire-restoration/>

FS Response: Opinion, no detailed response required.

Post Wildfire Logging Opposing View - “But seven of the world's leading forest ecologists say that salvage logging is the wrong prescription for fire-damaged forests such as the Siskiyou. Writing this year in the journal *Science*, they said research findings from around the world show that "salvage logging can impair ecosystem recovery." They also wrote that fire has long-term benefits that increase biological diversity -- and that salvage logging "undermines" these benefits.

Jerry F. Franklin, professor of ecosystem science at the University of Washington and a co-author of the *Science* article, said forests are more resistant to wildfire if they are not logged and replanted.”

Salvage Logging a Key Issue in Oregon

By Blaine Harden

Published in the Washington Post, October 15, 2004

<http://www.washingtonpost.com/wp-dyn/articles/A33571-2004Oct14.html>

FS Response: Article describing how salvage logging and forest health in general were a campaign issue in the 2004 elections. Not relevant to this project.

Post Wildfire Logging Opposing View - “Some land managers and forest scientists advocate the widespread use of silvicultural treatments (of which thinning is the most widely proposed harvest-based fuels reduction method) in western roadless areas to reduce fuel loads and tree stocking levels, and thereby decrease the probability of large, intense fires. Although thinning within the context of intensive forestry is not new, its efficacy as a tool for fire hazard reduction at the landscape scale is controversial, largely unsubstantiated, and fundamentally experimental in nature thereby requiring caution particularly when applied across large landscapes.” (FEMAT 1993, Henjum et al. 1994, DellaSala et al. 1995, SNEP 1996, USDA Forest Service 2000)

“There have been only a few empirical studies that have tested the relationship between thinning or fuels treatment and fire behavior on even a limited basis. In spite of

hypothesized benefits, these studies, as well as anecdotal information and analysis of recent fires, suggest that thinning treatments have highly variable results. In some instances, thinning treatments intended to reduce fire hazard appear to have the opposite effect (Huff et al. 1995, van Wagtenonk 1996, Weatherspoon 1996). Such treatments may reduce fuel loads, but they also allow more solar radiation and wind to reach the forest floor. The net effect is usually reduced fuel moisture and increased flammability.” (Countryman 1955, Agee 1997)

DellaSala, Dominick A. Ph.D. and Evan Frost. 2001

“A Comprehensive Strategy for Roadless Area Conservation and Fuels Reduction in Priority Areas”

http://www.kettlerange.org/salvagelogging/DellaSala&Frost_Comprehensive_Strategy.html

FS Response: Regarding management in roadless areas. This project does not propose any treatment in roadless areas. Not applicable.

Post Wildfire Logging Opposing View - “3. If trees are dead, why not log them anyway?

Dead and dying trees are the vital components of a new forest and are the “food” for regenerating ecosystems. Disturbances like fire often generate a primary source of large dead and downed trees that forests will depend on for decades to centuries. The dying trees still contain seeds that can renew a forest after fire and the large dead and downed trees perform unique ecosystem functions, including preventing erosion by anchoring soils, providing shade and “nurse logs” for seedling establishment, and wildlife and fish habitat for numerous birds, small mammals, bats, and fish, many of which help keep insects in check after a disturbance event. Logging removes these vital ‘legacy’ trees that “lifeboat” a forest through its rejuvenating stages. In congressional testimony to the House Subcommittee on Resources (November 10, 2005), prominent forest ecologist and University of Washington Professor Jerry Franklin said ‘*logging large dead trees likely has greater negative impacts on forest ecosystems than even logging green trees.*’ “

DellaSala, Dominick A. Ph.D. **“Post-Fire Logging Q & A”**

Published by the World Wildlife Fund

<http://forestlegacies.org/images/stories/pdfs/Publications/Fire/PostfireQA.pdf>

FS Response: Summary paper regarding seedling establishment in logged vs. unlogged stands. The Forest Service acknowledges the ecological diversity present in severely burned stands post fire. As such, this project is proposed to only harvest at most under the proposed action 4090 acres out of the 170,321 acres that burned on Forest Service land. In addition to that, those acres that are proposed for harvest, there are extensive design criteria (Appendix A of the

EA) that would mitigate negative effects to resources. Chapter 3 of the EA discuss the effects to all resources.

Post Wildfire Logging Opposing View - “While knowledge will never be complete, available information clearly indicates that post-disturbance logging and related activities impede or prevent ecosystem regeneration. Strittholt and Rustigian (2003) examined 23 studies of salvage logging, concluding that there was no scientific evidence to support the claim that such logging benefits forest ecosystem health or promotes late-successional forest characteristics – in fact, most of the scientific papers document damage from this activity. Lindenmayer et al. (2004) raise similar concerns in *Science*, and other scientific syntheses (Karr et al. 2004, Beschta et al. 2004) conclude that post-fire logging can be a significant deterrent to forest regeneration following natural disturbances (Donato et al. 2006). In congressional testimony to the House Subcommittee on Resources (November 10, 2005), prominent forest ecologist and University of Washington Professor Jerry Franklin said *‘timber salvage is most appropriately viewed as a tax on ecological recovery. The tax can either be very large or relatively small depending upon the amount of material removed and the logging techniques that are used.’* ”

DellaSala, D.A. Ph.D., G. Nagle Ph.D. , R. Fairbanks, D. Odion Ph.D.
J.E. Williams Ph.D., J. R. Karr Ph.D., C. Frissell Ph.D.,
and T. Ingalsbee Ph.D. 2006. **“The facts and myths of post-fire
management: a case study of the Biscuit fire, southwest Oregon”**
http://forestlegacies.org/images/stories/pdfs/Publications/Fire/BiscuitWhitePaper_1.10.06.pdf

FS Response: Discussion on salvage after the Biscuit Fire. The Forest Service acknowledges the ecological diversity present in severely burned stands post fire. As such, this project is proposed to only harvest at most under the proposed action 4090 acres out of the 170,321 acres that burned on Forest Service land. In addition to that, those acres that are proposed for harvest, there are extensive design criteria (Appendix A of the EA) that would mitigate negative effects to resources. Chapter 3 of the EA discuss the effects to all resources.

Post Wildfire Logging Opposing View - “Non-intervention policies after a forest fire therefore provide the opportunity for adaptive management that helps reduce restoration costs and increase the resilience of the system.”

J. Castro, C. Puerta-Pinero Ph.D., A.B. Leverkus Ph.D., and A. Sanchez-Miranda

Published by the Ecological Society of America, October 19, 2012

FS Response: Relevant science. The Forest Service acknowledges the ecological diversity present in severely burned stands post fire. As such, this project is proposed to only harvest at most under the proposed action 4090 acres out of the 170,321 acres that burned on Forest Service land. In addition to that, those acres that are proposed for harvest, there are extensive design criteria (Appendix A of the EA) that would mitigate negative effects to resources. Chapter 3 of the EA discuss the effects to all resources.

“Burned forests typically support significantly different bird communities, with many species dependent on stand-replacement fires to maintain their populations across the landscape. Usually there’s an increase in cavity-nesting, insectivorous birds such as woodpeckers and certain species of flycatchers.”

Duncan, Sally, a Ph.D. candidate in environmental sciences at Oregon State University. Published in the October 2002 issue of *Science Findings*, a publication of the Pacific Northwest Research Station, USDA Forest Service
<http://www.fs.fed.us/pnw/science/scifi47.pdf>

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Post Wildfire Logging Opposing View - “Summary of Findings: Scientific Review of Fire, Recovery, and Post-Fire Management

- Dead and dying trees provide important ecological functions to natural forest ecosystems.
- Post-fire salvage logging causes many of the same impacts to natural biodiversity as do green tree harvests.
- The elimination of post-fire habitat and regenerative processes by human intervention has made this habitat type rare.
- Any contention that an immediate and aggressive post-fire response is needed to protect forests is unfounded.”

“Ecological Issues Underlying Proposals to Conduct Salvage Logging in Areas Burned by the Biscuit Fire”

By **James Strittholt, Ph.D.**

Published by the Conservation Biology Institute, January 1, 2004

<https://consbio.org/products/projects/salvage-logging-biscuit-fire>

FS Response: Independent review of Biscuit Fire and salvage logging. This project has an extensive list (Appendix A) of project design criteria that would reduce or eliminate those effects outlined in the article. Additionally, the proposed action focuses on areas in matrix land allocations (suitable for timber harvest) (approximately 25,386 matrix acres within the project area) and further refined to only those acres which endured approximately 50-100 percent basal area loss. Further analysis refined the proposed action acres to 4,090 by "*removing units lacking economically viable products, logging systems operability and accessibility, locating and avoiding unmapped riparian reserves, and considerations for post-fire wildlife habitat and other resources.*" (EA at 1-1) The proposed action could potentially affect about 16% of the matrix lands within the project boundary, and could affect 30% of the matrix lands that fell into the 50-100 percent basal area loss. On a larger scale, the proposed action would affect only 2% within the fire perimeter that overlaps with Forest Service land.

Post Wildfire Logging Opposing View - "This litigation concerns the Forest Service's decision to conduct salvage logging on several thousand acres of burned forest land in the aftermath of the fire without preparing an EIS. Shortly after the fire, the Forest Service assessed The Big Tower Salvage and Revegetation Project ("Big Tower" project), the largest project to emerge from the planning process, involved three separate timber sales encompassing 4,186 acres and revegetation efforts on an additional 4,500 acres. It identified five areas for timber salvage sales within the Tower Fire area. the impacts of the fire on the watershed and developed a comprehensive fire recovery strategy."

"Although our review under the arbitrary and capricious standard is deferential, it does not condone a "clear error of judgment." Marsh, 490 U.S. at 378 . In this case, the Forest Service made a clear error of judgement in its decision to prepare only an EA for the Big Tower project and in its failure to analyze the combined effects of several salvage sales in the same watershed developed as part of a coordinated fire recovery strategy. Accordingly, we REVERSE and REMAND to the district court with directions that it remand to the Forest Service for further proceedings consistent with this opinion. The injunction issued by this Court on November 5, 1998, as clarified on November 9, 1998, shall remain in full force and effect until the Forest Service satisfies its NEPA obligations."

Fletcher, Betty B. and A. Wallace Tashima, **Circuit Judges**

Opinion in *Blue Mountains v. Blackwood*

161 F.3d 1208, 1214-16 (9th Cir. 1998)

<http://caselaw.lp.findlaw.com/cgi-bin/getcase.pl?court=9th&navby=case&no=9835783>

FS Response: Proceedings in a lawsuit regarding a salvage project. This project has an extensive list (Appendix A) of project design criteria that would reduce or eliminate those effects outlined in the article. Additionally, the proposed action focuses on areas in matrix land allocations (suitable for timber harvest) (approximately 25,386 matrix acres within the project area) and further refined to only those acres which endured approximately 50-100 percent basal area loss. Further analysis refined the proposed action acres to 4,090 by "removing units lacking economically viable products, logging systems operability and accessibility, locating and avoiding unmapped riparian reserves, and considerations for post-fire wildlife habitat and other resources." (EA at 1-1) The proposed action could potentially affect about 16% of the matrix lands within the project boundary, and could affect 30% of the matrix lands that fell into the 50-100 percent basal area loss. On a larger scale, the proposed action would affect only 2% within the fire perimeter that overlaps with Forest Service land.

Post Wildfire Logging Opposing View - "After the smoke settles and the embers die down the Forest Service will be sending burn area recovery teams out to do immediate fire damage mitigation on some of the burned landscape. Then a roadside hazard tree removal effort will follow on most of the accessible road network in the fire. Traditionally,

following the hazard tree removal the debate will begin about logging the burned trees across the fire perimeter.

Sierra Forest Legacy has several concerns regarding logging burned forests:

- Large burned trees have significant ecological value. The policy of immediately “salvaging” burned trees fails to recognize burned wood’s contribution to wildlife habitat, soil stability, soil nutrients, carbon sequestration, water retention and other values needed in the future forest.
- In fires like the Rim Fire the burned landscape will not contain new large diameter snags or large logs for hundreds of years in the future. Ecological restoration principles would argue for maintaining the large wood on the burned site to support ecological processes and forest structure until a new forest has aged enough to provide those large-tree attributes again.
- Snag retention guidelines for green forests where snags and logs are regularly replenished are inappropriate to use for severely burned forests which can not produce new large snags or logs for hundreds of years.
- Contrary to the above principles, large dead trees are often the prime target of post-fire removal (see photos below).

Three Big Fires in the Sierra Nevada (2013) ... and Three Big Issues to Follow

Published by Sierra Forest Legacy, September 23, 2013

https://www.sierraforestlegacy.org/NR_SFVoiceNewsletter/2013-09-23_V6N3.php

FS Response: Article discussing dead wood. Please refer to Appendix A of the EA, “***In addition, the following is the retention PDC for down woody debris in all units: Desired down wood retention for wildlife is to protect existing large down wood and add wood (including retained snags) to meet the Siskiyou Supplement Standards for tanoak and dry Douglas fir plant series (10 pieces of down wood 20 inches at large end and 20 feet long, 5 pieces of down wood of same size in Douglas-fir series); and add smaller down wood to meet 1.4 percent cover where possible. Down wood retention should be a priority near unburned edges, rock outcrops, riparian avoidance areas or remaining individual or clumps of green trees.***”

Post Wildfire Logging Opposing View - “Finally, as mentioned above, wildfires can also generate benefits. Many plants regrow quickly following wildfires, because fire converts organic matter to available mineral nutrients. Some plant species, such as aspen and especially many native perennial grasses, also regrow from root systems that are rarely damaged by wildfire. Other plant species, such as lodgepole pine and jack pine, have evolved to depend on stand replacement fires for their regeneration; fire is required to open their cones and spread their seeds. One author identified research reporting various significant ecosystems threatened by fire exclusion — including

aspen, whitebark pine, and Ponderosa pine (western montane ecosystems), longleaf pine, pitch pine, and oak savannah (southern and eastern ecosystems), and the tallgrass prairie. [57] Other researchers found that, of the 146 rare, threatened, or endangered plants in the coterminous 48 states for which there is conclusive information on fire effects, 135 species (92%) benefit from fire or are found in fire-adapted ecosystems.” [58]

“Animals, as well as plants, can benefit from fire. Some individual animals may be killed, especially by catastrophic fires, but populations and communities are rarely threatened. Many species are attracted to burned areas following fires — some even during or immediately after the fire. Species can be attracted by the newly available minerals or the reduced vegetation allowing them to see and catch prey. Others are attracted in the weeks to months (even a few years) following, to the new plant growth (including fresh and available seeds and berries), for insects and other prey, or for habitat (e.g., snags for woodpeckers and other cavity nesters). A few may be highly dependent on fire; the endangered Kirtland’s warbler, for example, only nests under young jack pine that was regenerated by fire, because only fire-regenerated jack pine stands are dense enough to protect the nestlings from predators.”

“Forest Fire/Wildfire Protection”

CRS Report for Congress

February 14, 2005

http://www.coloradofirecamp.com/congressional_research/forest-fire-wildfire-effects.htm

FS Response: We agree that there are ecological benefits from fire in the ecosystem. The Kirkland’s warbler nesting habitat is found around the Great Lakes in Minnesota and as such, would not apply to the project area.

Post Wildfire Logging Opposing View - “Undisturbed patches can amplify the diversity of the entire post-fire landscape. Over many years, repeated fires may burn in similar patterns in specific places leading to long-term varied distribution of species, organic matter, wetlands, etc.”

Foster, D.R.; Knight, D.H.; and J.F. Franklin. 1998.

“Landscape Patterns and Legacies Resulting from Large Infrequent Forest Disturbances”

Ecosystems 1: 497-510.

<http://www.jstor.org/pss/3658751>

FS Response: Agreed. The proposed action focuses on areas in matrix land allocations (suitable for timber harvest) (approximately 25,386 matrix acres within the project area) and further refined to only those acres which endured approximately 50-100 percent basal area loss. Further analysis refined the proposed action acres to 4,090 by "removing units lacking

economically viable products, logging systems operability and accessibility, locating and avoiding unmapped riparian reserves, and considerations for post-fire wildlife habitat and other resources." (EA at 1-1) The proposed action could potentially affect about 16% of the matrix lands within the project boundary, and could affect 30% of the matrix lands that fell into the 50-100 percent basal area loss. On a larger scale, the proposed action would affect only 2% within the fire perimeter that overlaps with Forest Service land. This will have the effect of large undisturbed patches.

Post Wildfire Logging Opposing View - "One indirect consequence of natural disturbance and pest and pathogen outbreaks that is often overlooked is that salvage or preemptive harvesting may affect a larger area or create a greater impact on forest ecosystems than the disturbance itself (Frothingham 1924; Irland 1998; Radeloff et al. 2000)." (Pg 966)

"Many decisions to harvest before or after a disturbance or to attempt to increase forest resistance or resilience to disturbance and stress are based on the incorrect notion that forest ecosystems are damaged, destroyed, or impaired following major disturbance and that this situation should be avoided or remediated (Maloney 2005)." (Pp. 966 and 967)

"Although intuitive support exists for the development of "protection forests" through silvicultural approaches to increase the resistance and resilience of forests to pests, pathogens, and natural disturbances, empirical data to support the approach are lacking. Not only is there sparse evidence that such approaches achieve their goals of increasing resistance and resilience, little evidence suggests that natural disturbances yield negative functional consequences. Therefore, current management regimes aiming to increase long-term forest health and water quality are ongoing "experiments" lacking controls. In many situations good evidence from true experiments and "natural experiments" suggests that the best management approach is to do nothing." (Pg. 968)

Foster, David R., Ph.D. and David A. Orwig Ph.D. "**Preemptive and Salvage Harvesting of New England Forests: When Doing Nothing Is a Viable Alternative**"

Conservation Biology, Volume 20, No. 4, August 2006

http://harvardforest.fas.harvard.edu/sites/harvardforest.fas.harvard.edu/files/publications/pdfs/Foster_ConservationBio_2006.pdf

FS Response: The purpose of this project is to capture economic value from trees affected by the fire. The design criteria (Appendix A of the EA) are in place to mitigate negative effects of the proposed action or alternative in combination with nationally developed best management practices designed to protect soils and hydrologic resources. Effects to all resources, economic and natural, can be found in the EA in Chapter 3.

Post Wildfire Logging Opposing View - “Natural forest disturbances, including fire, kill trees but remove very little of the total organic matter. Combustion rarely consumes more than 10 to 15 percent of the organic matter, even in stand-replacement fires, and often much less. Consequently, much of the forest remains in the form of live trees, standing dead trees, and logs on the ground. Also, many plants and animals typically survive such disturbances. This includes living trees, individually and in patches.

These surviving elements are biological legacies passed from the predisturbance ecosystem to the regenerating ecosystem that comes after. Biological legacies are crucial for ecological recovery. They may serve as lifeboats for many species, provide seed and other inocula, and enrich the structure of the regenerated forest. Large old trees, snags, and logs are critical wildlife habitat and, once removed, take a very long time to replace.

Management of postburn areas, including timber salvage, needs to incorporate the concept of biological legacies. Salvaging dead and damaged trees from burns involves the ecology of a place, not simply economics and fuels. In addition to effects on postfire wildlife habitat, there are also effects of salvage logging on soils, sediments, water quality, and aquatic organisms. Significant scientific information exists on this topic as well as on biological legacies.”

“Management of postburn areas, including timber salvage, needs to incorporate the concept of biological legacies. Salvaging dead and damaged trees from burns involves the ecology of a place, not simply economics and fuels. In addition to effects on postfire wildlife habitat, there are also effects of salvage logging on soils, sediments, water quality, and aquatic organisms. Significant scientific information exists on this topic as well as on biological legacies. Biological legacies differ by orders of magnitude in natural forests, a fact that should guide restoration programs. Where stand-replacement fires are characteristic, such as with lodgepole pine and Pacific Coast Douglas fir forests, massive areas of standing dead and down trees are usual; salvage operations generally are not needed and do not contribute to ecological recovery, even though they do provide economic return.”

Franklin, J.F. Ph.D., and J. Agee Ph.D. 2003
“**Forging a Science-Based National Forest Fire Policy**”
Issues in Science and Technology Online. Fall 2003.
<http://issues.org/20-1/franklin/>

FS Response: Broken link.

Post Wildfire Logging Opposing View - “It has been shown that salvage logging reduces the species richness and abundance of the boreal plant community. These effects were noticed across all burn severities but were the most prominent in the moderate burn sites. Salvage logging these areas tends to create longer lasting effects on the successional growth. This is a concern as forest managers target these sites as the main areas for salvage as they are the most valuable for the production of pulp and saw timber (Pshebnicki per. comm. 2004).”)Pg. 108)

Guedo, Dustin C. 2007 “**The Effects of Fire and Salvage Logging on Early Post-Fire Succession in Mixedwood Boreal Forest Communities of Saskatchewan**”

http://library2.usask.ca/theses/available/etd-09122007-165113/unrestricted/guedo_d.pdf

FS Response: Link broken.

Post Wildfire Logging Opposing View - “Native species have evolved with fire over millennia in western forests, and many depend upon post-fire habitat. Interestingly, some of the highest levels of native biodiversity among animals and higher plants are found in unlogged forested areas that have burned at high severity (Noss and others 2006, *Frontiers in Ecology and Environment*, Vol. 4).

It’s important for people to know the facts about fire, ecosystems, and climate. Unfortunately, the timber industry is less interested in the truth than it is in misleading people to serve its own economic goals.”

Hanson, Chad T. Ph.D. “**Logging Industry Misleads on Climate and Forest Fires**”

NewWest, July 11, 2008

http://www.newwest.net/topic/article/logging_industry_misleads_on_climate_and_forest_fires/C41/L41/

FS Response: The purpose of this project is to capture economic value from trees affected by the fire. The design criteria (Appendix A of the EA) are in place to mitigate negative effects of the proposed action or alternative in combination with nationally developed best management practices designed to protect soils and hydrologic resources. Effects to all resources, economic and natural, can be found in the EA in Chapter 3.

Post Wildfire Logging Opposing View - “Logistic regression modeling in the northern Rocky Mountains, based upon nesting presence or absence, found nest-site selection for Black-backed Woodpeckers to be strongly associated with high density of small snags within 11.3 m of the nest tree (Saab et al. 2002, 2004). This has led some land managers to conclude that a high-quality Black-backed Woodpecker territory consists of dense stands of small, young fire-killed trees. The results of our study, however, indicate why it is important to distinguish nest-site characteristics from foraging habitat (Hutto 2006). The Black-backed Woodpecker did not forage in the high severity and logged condition, despite high densities of small snags.”

Hanson, Chad T. Ph.D. and Malcolm P. North Ph.D., “**Postfire Woodpecker Foraging in Salvage-Logged and Unlogged Forests of the Sierra Nevada**”

The Condor, Vol. 110, Number 4, pages 777-782, October 2008

<http://www.bioone.org/doi/abs/10.1525/cond.2008.8611>

FS Response: Salvage harvest activity would take place on approximately 2% in the fire perimeter on Forest Service land, leaving areas for blacked backed woodpeckers to forage.

Post Wildfire Logging Opposing View - “It may seem counterintuitive, but the scientific evidence is telling us that some of the very best and richest wildlife habitat in western U.S. forests occurs where fire kills most or all of the trees. These areas are relatively rare on the landscape, and the many wildlife species that depend upon the habitat created by high-intensity fire are threatened by fire suppression and post-fire logging.”

“Specifically, the report (available at www.johnmuirproject.org) finds:

Patches of high-intensity fire (where most or all trees are killed) support among the highest levels of wildlife diversity of any forest type in the western U.S., and many wildlife species depend upon such habitat. Post-fire logging and ongoing fire suppression policies are threatening these species.”

Koehler, Matthew, February 3, 2010

“**New Report Debunks Myth of ‘Catastrophic Wildfire’** “

<http://www.sierraclub.org/sites/www.sierraclub.org/files/sce/loma-prieta-chapter/FPC/NewWestJohnMuirProjectArticle.pdf>

FS Response: Unable to open link.

Post Wildfire Logging Opposing View - "Personally, I've come to think we need to change our thinking on salvage logging. There are other values in the forest. In fact, a burned area is probably the most sensitive place you could be working in. The public really hasn't caught on to this yet. People still want to get the cut, get the trees they see as wasting away. They want the economic value. We talk about forest restoration after a fire, but it just got restored. That's what fire does. We know that, but we can't seem to get the message out. Until you start thinking like a black-backed woodpecker, you just ain't going to get it."

Hutto, Richard L. Ph.D. **"Birds in the Black: Through following avian wildlife, a UM scientist has discovered that burned forests play a critical role in the health and diversity of the Western landscape"**

The Missoulian, August 11, 2005.

http://www.missoulian.com/lifestyles/recreation/article_285770c7-1611-56bd-9b5a-db855da65841.html

FS Response: This project has an extensive list (Appendix A) of project design criteria that would reduce or eliminate those effects outlined in the article. Additionally, the proposed action focuses on areas in matrix land allocations (suitable for timber harvest) (approximately 25,386 matrix acres within the project area) and further refined to only those acres which endured approximately 50-100 percent basal area loss. Further analysis refined the proposed action acres to 4,090 by "*removing units lacking economically viable products, logging systems operability and accessibility, locating and avoiding unmapped riparian reserves, and considerations for post-fire wildlife habitat and other resources.*" (EA at 1-1) The proposed action could potentially affect about 16% of the matrix lands within the project boundary, and could affect 30% of the matrix lands that fell into the 50-100 percent basal area loss. On a larger scale, the proposed action would affect only 2% within the fire perimeter that overlaps with Forest Service land.

Post Wildfire Logging Opposing View - "Logging after the Biscuit fire, the study found, has harmed forest recovery and increased fire risk. What the short study did not say -- but what many critics of the Bush administration are reading into it -- is that the White House has ignored science to please the timber industry. The study is consistent with research findings from around the world that have documented how salvage

logging can strip burned forests of the biological diversity that fire and natural recovery help protect.”

“In Fire's Wake, Logging Study Inflames Debate”

Washington Post, February 27, 2006

<http://www.washingtonpost.com/wp-dyn/content/article/2006/02/26/AR2006022601287.html>

FS Response: This project has an extensive list (Appendix A) of project design criteria that would reduce or eliminate those effects outlined in the article. Additionally, the proposed action focuses on areas in matrix land allocations (suitable for timber harvest) (approximately 25,386 matrix acres within the project area) and further refined to only those acres which endured approximately 50-100 percent basal area loss. Further analysis refined the proposed action acres to 4,090 by *"removing units lacking economically viable products, logging systems operability and accessibility, locating and avoiding unmapped riparian reserves, and considerations for post-fire wildlife habitat and other resources."* (EA at 1-1) The proposed action could potentially affect about 16% of the matrix lands within the project boundary, and could affect 30% of the matrix lands that fell into the 50-100 percent basal area loss. On a larger scale, the proposed action would affect only 2% within the fire perimeter that overlaps with Forest Service land.

Post Wildfire Logging Opposing View - “Fire-created snags and logs serve many vital ecological functions for forest soils, streams, vegetation, and wildlife. Large-diameter snags and logs can also help mitigate conditions that lead to high-intensity fires, and aid post-fire natural recovery processes. Conversely, commercially extracting fire-killed trees via salvage logging causes significant short- and long-term adverse effects on forest ecosystem structures, functions and processes. Considering the wide array of vital ecological services that snags and logs provide, the term "salvage" is appropriate only for logging operations in which the primary management objective is extraction of commodity timber values at the expense of other economic and ecological values. Given these environmental impacts and ecological tradeoffs, the claim that salvage logging is a valid tool for forest recovery, rehabilitation, or restoration must be challenged. The more scientists learn about the ecological values of large fire-killed snags and logs, the more clear it becomes that "salvaging" burned trees is scuttling forest ecosystems.”

Salvaging Timber; Scuttling Forests

Ingalsbee, Timothy Ph.D., 2003

<http://www.sierraforestlegacy.org/Resources/Conservation/FireForestEcology/SalvageLoggingScience/Salvage-Ingalsbee.pdf>

FS Response: Link broken.

Post Wildfire Logging Opposing View - "Recent changes in the forest policies, regulations, and laws affecting public lands encourage postfire salvage logging, an activity that all too often delays or prevents recovery."

"Postfire salvage logging generally damages soils by compacting them, by removing vital organic material, and by increasing the amount and duration of topsoil erosion and runoff (Kattleman 1996), which in turn harms aquatic ecosystems. The potential for damage to soil and water resources is especially severe when ground-based machinery is used." (Pg. 1,029)

"Postfire salvage logging has numerous ecological ramifications. The removal of burned trees that provide shade may hamper tree regeneration, especially on high-elevation or dry sites (Perry et al. 1989). The loss of future soil organic matter is likely to translate into soils that are less able to hold moisture (Jenny 1980), with implications for soil biota, plant growth (Rose et al. 2001, Brown et al. 2003), and stream flow (Waring and Schlesinger 1985). Logging and associated roads carry a high risk of spreading nonindigenous, weedy species (CWWR 1996, Beschta et al. 2004)." (Pg. 1,029)

The Effects of Postfire Salvage Logging on Aquatic Ecosystems in the American West"

Karr, James R Ph.D., Johnathan J. Rhodes. G. Wayne Minshall Ph.D., F. Richard Hauer Ph.D., Robert L. Beschta Ph.D., Christopher A. Frissell and David A. Perry Ph.D. "Published by the University of Montana, November 2004

https://scholarworks.umt.edu/cgi/viewcontent.cgi?referer=http%253A%252F%252Fwww.bing.com%252Fsearch%253Fq%253D%2522The%2520Effects%2520of%2520Postfire%2520Salvage%2520Logging%2520on%2520Aquatic%2520Ecosystems%2520in%2520the%2520American%2520West%25E2%2580%259D&=&qsn=&=&form=QBLH&=&sp=-1&=&pq=undefined&=&sc=0-84&=&sk=&=&cvid=E29CAFE1C3904B149C35682B77890B69&=&httpsredir=1&mp=&article=1022&=&context=biosci_pubs&=&sei-redir=1#search=%22Effects%20Postfire%20Salvage%20Logging%20Aquatic%20Ecosystems%20American%20West%E2%80%9D%22

FS Response: This project has an extensive list (Appendix A) of project design criteria that would reduce or eliminate those effects outlined in the article. Additionally, the proposed action focuses on areas in matrix land allocations (suitable for timber harvest) (approximately 25,386 matrix acres within the project area) and further refined to only those acres which endured approximately 50-100 percent basal area loss. Further analysis refined the proposed action acres to 4,090 by "removing units lacking economically viable products, logging systems operability and accessibility, locating and avoiding unmapped riparian reserves, and considerations for post-fire wildlife habitat and other resources." (EA at 1-1) The proposed action could potentially affect about 16% of the matrix lands within the project boundary, and

could affect 30% of the matrix lands that fell into the 50-100 percent basal area loss. On a larger scale, the proposed action would affect only 2% within the fire perimeter that overlaps with Forest Service land.

Post Wildfire Logging Opposing View - “Local scientists and activists have also done an excellent job of monitoring the negative impacts of the Biscuit logging and providing the public and the media with graphic photos, which, to even a casual observer, clearly demonstrates that post-fire industrial logging has absolutely nothing to do with forest restoration or recovery.”

Does Post-Fire Logging make Ecological or Economic Sense?

By Koehler, Matthew

Published by *Dissident Voice*, February 6, 2006

<http://dissidentvoice.org/Feb06/Koehler01.htm>

FS Response: Opinion, detailed response not required.

Post Wildfire Logging Opposing View - “Salvage logging and replanting will convert a structurally complex landscape into a simplified and biologically deprived landscape. Unsalvaged, naturally regenerated, young stands are one of the rarest forest types in the Pacific northwest, and their biodiversity rivals that of old-growth forests. Indeed, naturally developed early successional forest habitats, with their rich array of snags and logs and nonarborescent vegetation, are probably the scarcest habitat in the current regional [Pacific Northwest] landscape.”

Lindenmayer, D.L., D. Perry Ph.D., and J.F. Franklin Ph.D. 2002.

“Conserving Forest Biodiversity: A Comprehensive

Multiscale Approach” Island Press. Washington, DC: 69.

<http://search.barnesandnoble.com/Conserving-Forest-Biodiversity/David-B-Lindenmayer/e/9781559639347>

FS Response: Link to buy a book.

Post Wildfire Logging Opposing View - “[N]atural disturbances are key ecosystem processes rather than ecological disasters that require human repair. Recent ecological paradigms emphasize the dynamic, nonequilibrium nature of ecological systems in which disturbance is a normal feature and how natural disturbance regimes and the maintenance of biodiversity and productivity are interrelated.”

“[R]emoval of large quantities of biological legacies can have negative impacts on many taxa. For example, salvage harvesting removes critical habitat for species, such as cavity-nesting mammals, [and] woodpeckers. Large-scale salvage harvesting is often begun soon after a wildfire, when resource managers make decisions rapidly, with long lasting ecological consequences....”

Lindenmayer, D.B. Ph.D. and Reed F. Noss Ph.D.,

“Salvage Logging, Ecosystem Processes, and Biodiversity Conservation”

Conservation Biology Volume 20, No. 4, August 2006

<http://www.sierraforestlegacy.org/Resources/Conservation/FireForestEcology/SalvageLoggingScience/Salvage-Lindenmayer06.pdf>

FS Response: Broken link.

Post Wildfire Logging Opposing View - “Fire releases nutrients and uncovers bare soil. The blackened, bare soil warms quickly, which stimulates soil microbial activity, nutrient cycling, and plant growth. In forests, fire opens up part of the canopy to sunlight, which allows sun-loving plant species to recolonize the site. In prairies, fire can remove dead vegetation that hinders new growth, reduce invasive plants, encourage native species, and create wildlife habitat.”

“Following fires, plant communities go through successional changes. Many native wildlife species and popular game species, such as bobwhite quail, white-tailed deer, and wild turkey, are dependent on periodic fire to create and maintain suitable habitat. Surface fires can stimulate the growth of herbaceous foods for deer, elk, moose, and hares, and can enhance berry production for black bears and other wildlife. Small mammal populations generally increase in response to new vegetation growth, providing a food source for carnivores. Fire can also reduce internal and external parasites on wildlife.” (pg. 2)

“natural disturbance such as fires, floods, and herbivory are critical in maintaining valuable ecosystem functions and creating and restoring wildlife habitat.” (pg. 7)

Marks, Raissa, Wildlife Habitat Council member

Fish and Wildlife Habitat Management Leaflet number 37

FS Response: The above excerpts all are not in dispute for this project. Additionally, the proposed action focuses on areas in matrix land allocations (suitable for timber harvest) (approximately 25,386 matrix acres within the project area) and further refined to only those acres which endured approximately 50-100 percent basal area loss. Further analysis refined the proposed action acres to 4,090 by "*removing units lacking economically viable products, logging systems operability and accessibility, locating and avoiding unmapped riparian reserves, and considerations for post-fire wildlife habitat and other resources.*" (EA at 1-1) The proposed action could potentially affect about 16% of the matrix lands within the project boundary, and could affect 30% of the matrix lands that fell into the 50-100 percent basal area loss. On a larger scale, the proposed action would affect only 2% within the fire perimeter that overlaps with Forest Service land.

Post Wildfire Logging Opposing View - "Fires can have substantial and seemingly negative effects on streams, particularly smaller streams. Fires may affect the delivery of sediment, the availability of woody debris and other organic materials, and the cycling of nutrients. While fires rarely kill fish outright, fires may directly affect the food chains that ultimately support the fish. Most importantly, fires can sometimes radically accelerate the delivery of sediment to stream channels which -- if compounded by management -- can produce chronic and substantial loss of in-channel habitat, and seriously delay the biological recovery of the stream.

However, viewed at the right scale of time and space, fires are not disasters for streams, indeed fires can induce natural ecological changes that benefit streams and the species that depend on them. The natural recovery of streams after fires can result in improved fish habitat if we do not interfere with the natural recovery processes that initiate themselves soon after the fires are gone. Fire-killed trees are a vital part of both watershed and stream recovery, providing part of the natural environment of the reseeding and vegetative recovery of the watershed, and providing vital stabilizing structure in stream channels and floodplains. If fire-killed trees are logged out of the watershed, these functions, among others, are lost for decades, even centuries."

Minshall, G. Wayne Ph.D., Karr, James R. Ph.D.
Meyer, Judy L. Ph.D., Frissell, Christopher A. Ph.D. and Stanford, Jack A.

From a letter to President Clinton

September 19, 1994

<http://www.saveamericasforests.org/congress/Fire/Scientists-Anti-Salvage%20Logging-1992.htm>

FS Response: Letter to the president. See above responses regarding size of project compared to the size of the fire perimeter.

Post Wildfire Logging Opposing View - "As you know, a forest is composed of more than just trees, it also includes the rivers, streams, lakes, wetlands, and the biological, physical, and chemical processes and ecological functions that link all these pieces together. All these parts and the way that they fit together and the interactions among them constitute the integrity of the ecosystem. It is the maintenance of this integrity that must guide the way we manage forests so that they benefit this and future generations."

"There is a widespread, but incorrect, assumption that dead or so-called rotting trees provide no ecological value if left in place."

"Burned dead and dying trees are important to the ecological integrity of the forests and streams and serve an important function in the post-fire recovery of these ecosystems. Their indiscriminate or overzealous removal can significantly impede recovery."

Minshall, Wayne Ph.D., **Testimony at the oversight hearings before the Task Force on salvage timber and forest health of the Committee on Resources, House of Representatives (pg. 89)**

October 1995

http://www.archive.org/stream/salvagetimberfor01unit/salvagetimberfor01unit_djvu.txt

FS Response: This project has an extensive list (Appendix A) of project design criteria that would reduce or eliminate those effects outlined in the article. Additionally, the proposed action focuses on areas in matrix land allocations (suitable for timber harvest) (approximately 25,386 matrix acres within the project area) and further refined to only those acres which endured approximately 50-100 percent basal area loss. Further analysis refined the proposed action acres to 4,090 by "*removing units lacking economically viable products, logging systems operability and accessibility, locating and avoiding unmapped riparian reserves, and considerations for post-fire wildlife habitat and other resources.*" (EA at 1-1) The proposed action could potentially affect about 16% of the matrix lands within the project boundary, and could affect 30% of the matrix lands that fell into the 50-100 percent basal area loss. On a larger scale, the proposed action would affect only 2% within the fire perimeter that overlaps with Forest Service land.

Post Wildfire Logging Opposing View - "However, it is know that virtually all forms of postfire logging can have various adverse effects on stream ecosystems (e.g., Mehahan, 1983; Smith et al., 1993a, b; Stout et al., 1993; Ketcheson and Megahan, 1996)."

"In addition, fire lines should be obliterated prior to logging, and road construction or other major ground-disturbing activities should be avoided in order to prevent additional runoff and erosion. Salvage harvest yields responses (e.g., ground disturbance, woody debris removal, interruption of normal infiltration pathways, and acceleration of surface flows) that interact with the direct and indirect effects of fire to make these actions so potentially damaging. In addition, the negative effects extend many years beyond the actual time of salvage activities because of the harvest of snags that normally fall and become incorporated into stream channels and forest floors over several decades or more (Lyon, 1984). These wood inputs are important to create habitat, increase nutrients, and retard runoff and channel alteration during what is normally the most critical stage of stream and riparian vegetation recovery (Minshall et al., 1989; Lawrence and Minshall, 1994)."

Minshall, G.W. Ph.D., **"Responses of stream benthic macroinvertebrates to fire"**

Forest Ecology and Management, 178 (2003) 155–161

https://cfpub.epa.gov/ncer_abstracts/index.cfm/fuseaction/display/files/fileID/13180

FS Response: Agreed. This project would implement the proposed action with design criteria (Appendix A) to mitigate impacts of the activities on aquatic resources. Additionally, nationally developed best management practices would be used to avoid unintended negative impacts. Effects to all resources outlined in Chapter 3 of the EA.

Post Wildfire Logging Opposing View - "Second, post-fire (salvage) logging does not contribute to ecological recovery; rather, it negatively affects recovery processes, with the intensity of impacts depending upon the nature of the logging activity (Lindenmayer *et al.* 2004). Post-fire logging in naturally disturbed forest landscapes generally has no direct ecological benefits and many potential negative impacts (Beschta *et al.* 2004; Donato *et al.* 2006; Lindenmayer and Noss 2006). Trees that survive fire for even a short time are critical as seed sources and as habitat that sustains biodiversity both above- and belowground."

Noss, Reed F. Ph.D., Franklin, Jerry F. Ph.D., Baker, William L. Ph.D.,
Schoennagel, Tania Ph.D., and Moyle, Peter B. Ph.D.

"Managing fire-prone forests in the US"

University of California, Davis, 2006

<https://watershed.ucdavis.edu/library/managing-fire-prone-forests-western-united-states>

FS Response: This project has an extensive list (Appendix A) of project design criteria that would reduce or eliminate those effects outlined in the article. Additionally, the proposed action focuses on areas in matrix land allocations (suitable for timber harvest) (approximately 25,386 matrix acres within the project area) and further refined to only those acres which endured

approximately 50-100 percent basal area loss. Further analysis refined the proposed action acres to 4,090 by "removing units lacking economically viable products, logging systems operability and accessibility, locating and avoiding unmapped riparian reserves, and considerations for post-fire wildlife habitat and other resources." (EA at 1-1) The proposed action could potentially affect about 16% of the matrix lands within the project boundary, and could affect 30% of the matrix lands that fell into the 50-100 percent basal area loss. On a larger scale, the proposed action would affect only 2% within the fire perimeter that overlaps with Forest Service land.

Post Wildfire Logging Opposing View - "The wildland fires of 2000, 2002, and 2003 created many opportunities to conduct post-fire logging operations in the Inland Northwest. Relatively little information is available on the impact of post-fire logging on long-term soil productivity or on the best method for monitoring these changes."

"Our results indicate that post-fire logging during the summer creates more detrimental disturbance (50% of the stands) than winter harvesting (0% of the stands). In addition, on the sites we sampled, equipment type (tractor - forwarder - rubber-tired skidder) also influenced the amount of detrimental disturbance."

Page-Dumroese, Deborah Ph.D., Martin Jurgensen Ph.D., Ann Abbott, Tom Rice Ph.D., Joanne Tirocke, Sue Farley, and Sharon DeHart. 2006. **"Monitoring Changes in Soil Quality from Post-fire Logging in the Inland Northwest"**
In: Andrews, Patricia L.; Butler, Bret W., comps. 2006. *Fuels Management-How to Measure Success*: Conference Proceedings. 28-30 March 2006
Portland, OR. *Proceedings RMRS-P-41*. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. p. 605-614.
<http://www.treeseearch.fs.fed.us/pubs/25982>

FS Response: See the EA at 3-88 "*Prior to and post-implementation, monitoring would be performed to determine if selected units were meeting Region 6 Soil Quality Standards, and is described as such in the PDCs described in Chapter 2. The Sale Administrator would monitor all units during management activities to assure that operating conditions are adequate to minimize cumulative effects to the soil resource.*"

Post Wildfire Logging Opposing View - "Can salvage timber sales be compatible with ecosystem-based management? Our findings suggest that this type of harvesting is not

compatible with contemporary ecosystem-based management. Ecosystem-based management would emphasize removing smaller green trees with greater attention to prevention of mortality rather than removal of large dead trees.”

“The authors start off the discussion by saying ‘They (salvage harvest timber sales) can be (compatible with ecosystem base management), but much depends on the types of stand structures that are harvested.’ Most of the discussion in this section is in reference to other than post-fire salvage. The authors do go on to suggest that ‘Salvage harvest methods in burned areas will also need to consider minimizing surface soil disturbance and reducing road-related sediment problems.’ These concepts were taken into consideration in the development of the WFR project design. Specifically, in reference to the type of stand structure that is harvested, the project design includes a series of salvage units adjacent to untreated corridors and drainages creating a mosaic of salvage and no-salvage logged areas. Within the salvage units, a proportion of the dead trees larger than 14” as well as the majority of the dead trees less than 14” will be left standing.” (Pgs. 103 and 104)

Quigley, Thomas M. Ph.D., tech. ed. 1996; “**The Interior Columbia Basin Ecosystem Management Project: Scientific Assessment.**”

Gen. Tech. Rep. PNW-GTR-382; Page 178.

Published in Post-Fire Logging Summary of Key Studies and Findings, February 2006

http://a123.g.akamai.net/7/123/11558/abc123/forestservic.download.akamai.com/11558/www/nepa/36016_FSPLT1_014160.pdf

FS Response: This is a literature review for another salvage project.

Post Wildfire Logging Opposing View - “Disturbances, from windthrown trees to fires, are natural in forests and are essential for forest ecosystem well being. For example, fire is a disturbance in forests, but it is also beneficial. While disturbances kill some individuals, they also open up ecological living space for recolonization by many previously excluded species.

Without fire, natural succession is upset. In a forest where fire has been unnaturally suppressed for many years (50 or more), fire intolerant trees grow unchecked, suppressing and outcompeting the normally dominant fire resistant trees. Overall biodiversity is reduced. As the tree diversity declines, the habitat becomes unsuitable for a large portion of the forest species. Animal species are lost, since the animals use the fire tolerant variety of tree species for food, shelter and nest sites.

Reice, Seth, Ph.D., Associate Professor of Biology
in the Department of Biology and Curriculum in Ecology

University of North Carolina.

Dr. Reice has over 20 years of research experience
in forest watershed ecology and disturbance regimes.

from a press conference with Senator Robert Torricelli, April 28, 1998,

<http://www.saveamericasforests.org/news/ScientistsStatement.htm>

FS Response: Transcripts from a press conference. See effects to wildlife in the EA beginning at 3-11.

Post Wildfire Logging Opposing View - "Expedited logging after forest fires may harm forests, according to nearly 170 scientists responding to efforts in the U.S. Congress to pass the Forest Emergency Recovery and Research Act. The issue of salvage logging was highlighted by a forum in Washington, D.C. this month, during which the impacts of logging in a forest following fires or other natural events were discussed, including the role these events play in maintaining wildlife and "healthy" forests."

"A burned area may be the most ecologically sensitive place for logging, said Dr. Richard Hutto, professor and director of the Avian Science Center at the University of Montana. "We talk about forest restoration after a fire, but it just got restored by fire itself," he said. "That's what fire does."

**"Scientists: Salvage logging following a forest
fire hinders recovery, restoration"**

Cyberwest, March 26, 2006

<http://www.cyberwest.com/forest-ecology/post-forest-fire-salvage-logging.shtml>

FS Response: This project has an extensive list (Appendix A) of project design criteria that would reduce or eliminate those effects outlined in the article. Additionally, the proposed action focuses on areas in matrix land allocations (suitable for timber harvest) (approximately 25,386 matrix acres within the project area) and further refined to only those acres which endured approximately 50-100 percent basal area loss. Further analysis refined the proposed action acres to 4,090 by "*removing units lacking economically viable products, logging systems operability and accessibility, locating and avoiding unmapped riparian reserves, and considerations for post-fire wildlife habitat and other resources.*" (EA at 1-1) The proposed action could potentially affect about 16% of the matrix lands within the project boundary, and could affect 30% of the matrix lands that fell into the 50-100 percent basal area loss. On a larger scale, the proposed action would affect only 2% within the fire perimeter that overlaps with Forest Service land.

Post Wildfire Logging Opposing View - “The new study is part of a growing body of literature that questions the ecological value of post-fire logging. Dominick DellaSala, a forest ecologist with the World Wildlife Fund, says that there is an emerging consensus among scientists that logging burned areas can exacerbate soil damage and erosion, harm waterways, increase fire danger, and hinder natural forest recovery by killing seedlings. More importantly, it removes the big dead trees that contribute to habitat diversity and critical forest processes such as nutrient cycling.”

“Study questions value of post-fire logging”

By Sarah Gilman

Published in *High Country News*, February 6, 2006

<http://www.hcn.org/issues/315/16079>

FS Response: Magazine article describing conflicting science surrounding salvage after the Biscuit Fire. Design Criteria (Appendix A of the EA) are used to mitigate many of the concerns outlined in the article. Additionally, nationally developed best management practices have the same goal.

Post Wildfire Logging Opposing View - “Ecological benefits of fire

- Promotes flowering of herbaceous species and fruit production of woody species.
- Improves nutritional quality of plants for both wild and domestic animals.
- Enhances nutrient cycling of some elements and elevates soil pH.
- Maintains required habitat conditions for fire-adapted plant and animal species.
- Results in a more heterogenous and diverse habitat--if natural fires are patchy--leaving pockets of unburned areas.
- Prohibits wildfire conditions from developing (i.e., vast accumulation of highly-flammable, dead vegetation.)”

Understanding Fire: Nature's Land Management Tool

Tanner, G.W. Ph.D., W.R. Marion Ph.D., and J.J. Mullahey Ph.D.

A Florida Cooperative Extension Service publication, July, 1991

<https://www.amazon.co.uk/Understanding-fire-management-Cooperative-Extension/dp/B0006DB61S>

FS Response: Link to a United Kingdom book available on Amazon. No detailed response required.

Post Wildfire Logging Opposing View - “On March 24, 2006, the Ninth Circuit Court of Appeals temporarily enjoined two post-fire timber projects in the El Dorado National Forest. *Earth Island Inst. v. United States Forest Serv.*, --F.3d--, 2006 WL 767012 (9th Cir. 2006). The Court scolded the U.S. Forest Service (USFS), opining that the government appeared more interested in allowing timber harvesting to proceed than thoroughly reviewing their environmental impacts. *Id.* at ** 26-27.”

Till, Dustin, “**Ninth Circuit Burns Forest Service over Post-Fire Timber Salvage Projects**”

Marten Law, April 5, 2006

<http://www.martenlaw.com/news/?20060405-timber-salvage>

FS Response: Article discussing 2 law suits on salvage projects in 2006. Not relevant to this project.

Post Wildfire Logging Opposing View - “The new studies provide the first “real, direct data” showing that more forests burned historically, creating more post-fire forest habitat, said Chad Hanson, a forest ecologist and director of the John Muir Project who is helping lead the listing effort and suing the Forest Service to block post-fire logging in woodpecker habitat near Lake Tahoe.

“It indicates the woodpeckers had more habitat historically than they do now,” Hanson said.

Williams said when he started the study he had “the same general ideas most people have — that the forests were less dense and there were frequent, less severe fires to maintain that structure.”

Now, he believes thinning and post-fire salvage operations should be re-examined and emphasis placed on maintaining high-density stands in certain circumstances that would not threaten people or homes.

“We shouldn’t be managing just for low-density forests,” he said. “We should not be unhappy with — or perhaps even manage for — higher severity fires in the forests.” “

“The Forest Service did not immediately respond to a request for comment.”

Study challenges views about Western forest fires

By Sonner, Scott AP

Published in the Denver Post, July 20, 2012

<http://www.denverpost.com/2012/07/20/study-challenges-views-about-western-forest-fires/>

FS Response: Article describing a study where it was suggested that high severity fires were more common in the past than previously thought, indicating that woodpeckers historically had more habitat. Salvage harvest activity would take place on approximately 2% in the fire perimeter on Forest Service land, leaving areas for blacked backed woodpeckers to forage.

Post Wildfire Logging Opposing View - “In *Earth Island Institute v. Forest Service* (2003), and again in an identically titled 2006 case, the Ninth Circuit heard arguments concerning post-fire timber sales in Northern California's Eldorado National Forest. In both cases, the Ninth Circuit determined that the district courts improperly denied preliminary injunctions because the plaintiffs would likely succeed on the merits of their claims alleging that the U.S. Forest Service failed to comply with various provisions of the National Environmental Policy Act (NEPA) and the National Forest Management Act (NFMA). In concurring opinions in both cases, Judge Noonan suggested that the U.S. Forest Service may be disqualified as a decision maker in post-fire logging issues given the agency's financial interest in such sales. That proposition, grounded in Fifth Amendment procedural due process principles, casts doubt on the Forest Service's capacity to act neutrally where it stands to gain off-budget revenue from so-called "salvage" sales.”

“Post-fire timber sales are an acute illustration of the skewed incentives driving Forest Service timber sales generally. As the revenue from traditional timber sales has declined, post-fire timber sales offer a new way to substantially augment the Forest Service budget. While the agency's extractive bent is likely due to a variety of factors apart from financial incentives,^[346] the ability to derive off-budget revenue from timber sales is undeniably enticing. While the procedural due process principles Judge Noonan espoused in his *Earth Island I* and *Earth Island II* concurrences cannot gain traction without a liberty or property interest, those terms are not stagnant. Just as the rise of welfare benefits and other government entitlements programs wrought a fresh conception of property in *Goldberg*, so might future courts come to recognize the moral frailty of current entitlements doctrine. A stilted view of liberty and property should not cripple the right to a neutral decision maker in post-fire logging adjudications.”

The Quick and the Dead: *Earth Island v. Forest Service* and the Risk of Forest Service Financial Bias in Post-Fire Logging Adjudication”

By Saylor, Austin

Published by the Free Library

“Conclusion

The Ninth Circuit’s holding in *Lands Council* threatens the Forest Service’s ability to follow its routine practice of harvesting dying trees as part of salvage timber operations in eastern Oregon and Washington. Although the Ninth Circuit noted that the Forest Service “is free, of course, to amend the Eastside Screens to allow logging of old-growth dying trees, either by adding a definition of the term ‘live trees’ or by changing the requirements to maintain all live trees of a certain size.” Until the Forest Service does so, or the district court reaches a decision on the merits of plaintiffs’ claim, conservation groups have a new tool to enjoin post-fire salvage projects in eastside old-growth forests.[19]”

“Not Dead Yet”: Ninth Circuit Bars Harvest of “Fire-Damaged” Trees During Timber Salvage Operations”

A Marten Law publication, March 14, 2007

<http://www.martenlaw.com/newsletter/20070314-tree-harvest-ban>

FS Response: Article on law website discussing a law suit on an eastside forest harvesting old growth fire damaged trees that still had green needles. Not relevant to this project as it is not affected by the Eastside Screens.

Post Wildfire Logging Opposing View - "The Forest Service and private timber companies often advocate on behalf of “salvaging” dead and dying standing trees for their commodity value following a wildfire event. Post-fire logging extracts these merchantable burned trees and leaves behind the smallest trees which happen to have little commercial value and increase the fire danger.”

“Post-fire logging also disrupts natural ecological processes, threatens the habitat of wildlife species, and reduces water quality. Post-fire logging hinders forest regeneration and restoration by compacting soils, damaging riparian corridors, introducing and spreading invasive species, causing erosion, adding sediment to streams, degrading water quality, and removing trees utilized for habitat.”

Salvage Logging

Published by Sierra Forest Legacy, 2012

http://www.sierraforestlegacy.org/FC_FireForestEcology/FFE_SalvageLoggingScience.php

FS Response: Environmental group website with a summary of science opposed to salvage logging. See Appendix A of the EA for design criteria applicable to this project that will mitigate effects of the proposed action like the effects described in this article. Additionally, nationally developed best management practices address activities that could produce sediment additions to streams.

Post Wildfire Logging Opposing View - "Thus, increases in salvage logging of burned forests may have serious negative consequences for deadwood-associated beetles and their ecological functions in early postfire successional forests."

Cobb, T. P., J. L. Morissette, J. M. Jacobs, M. J. Koivula, J. R. Spence, and D. W. Langor, "**Effects of postfire salvage logging on deadwood-associated beetles.**"
Published in *Conservation Biology*, v. 25, no. 1, p. 94-104, 2011
<https://www.frames.gov/rcs/ttrs/25000/25678.html>

FS Response: Salvage harvest activity would take place on approximately 2% in the fire perimeter on Forest Service land, leaving areas for bark beetles and the associated woodpecker species to forage. Effects to dead wood are discussed in the EA at 3-17.

Post Wildfire Logging Opposing View - "Post-fire salvage sales are the kind of timber sales where profits for logging companies are most dependent upon getting large fire resilient trees out of the public's forests as quickly as possible, regardless of the ecological impacts. But as illustrated in this report, these profits for logging companies come at great cost to the public, our environment and future generations.

Salvage logging impedes natural post-fire recovery processes in forest ecosystems that evolved with periodic fire disturbances, and depend on dead and dying trees for maintenance of ecosystem functions and forest health. In sum, post-fire salvage logging offers no environmental or economic benefits to ecosystems or taxpayers, but instead, entails huge risks of irreversible loss of soils, and great harm to water quality, native vegetation, and wildlife habitat. The information provided in this report, and the overview of the ecological values at stake in current salvage logging proposals, will hopefully inspire members of Congress and the public they serve to end this most destructive and exploitative form of commercial logging on public lands."

Ambrose, Christine Ph.D., Jeffrey Berman, Bryan Bird, Susan Jane Brown, Karen Coulter, Dominick DellaSala, Ph.D., Lisa Dix, Greg Dyson, Francis Eatherington, Chad Hanson Ph.D., Doug Heiken, Timothy Ingalsbee, Ph.D., Matthew Koehler, Ara Marderosian, Anne Martin, Asante Riverwind, Brian Segee, Rolf Skar, Stephanie Smith, Rocky Smith, Randi Spivak, John Talberth, Ph.D., and Rene Voss Ph.D.
"Restoration or Exploitation? Post-Fire Salvage Logging in America's National Forests"

[illegible]

Multiple plant and animal species depend on post fire habitats. Fire maintains the quality and quantity of foraging habitat for wide-ranging species such as deer and elk. Damaged and dead trees (snags) are important structural forest components and are key habitat for numerous species. They provide forage, cavities for nesting and protection, perch sites, and den sites. Large snags are one of the most distinctive features of an old-growth forest and contribute shade, providing cool microclimates and future soil nutrients.”

Forests Need Fire — Not Destructive Salvage Logging

<http://www.wildcalifornia.org/action-issues/fire/>

Post Wildfire Logging Opposing View – “Rep. Jay Inslee did a good deed in the pursuit of good science. His pointed request for an investigation was apparently enough to restore funding for an important — and controversial — study of forest regeneration after wildfires.

The Washington congressman asked why the U.S. Bureau of Land Management's latest budget suspended funding for the final year of a study, led by an Oregon State University graduate student, into a massive forest fire in Southern Oregon in 2002.

The study, published last month in *Science magazine*, concluded that salvage logging after a wildfire can be counterproductive to forest recovery and fuel reduction.

The Bush administration apparently did not like the conclusions of the work to date and in effect was pulling the plug on further research. If this were the first brush with the administration politicizing science, it might have gone unnoticed. Sadly, it has happened before.”

“Charred forest science”

Seattle Times editorial, February 13, 2006

<http://community.seattletimes.nwsources.com/archive/?date=20060213&slug=treed13>

FS Response: Newspaper article discussing controversy of salvage logging. Nothing specific to this project or introducing new science. No detailed response warranted.

Post Wildfire Logging Opposing View – “MEDFORD, Ore. -- If fire ravages a national forest, as happened here in southwest Oregon when the Biscuit fire torched a half-million acres four years ago, the Bush administration believes loggers should move in quickly, cut marketable trees that remain and replant a healthy forest.

"We must quickly restore the areas that have been damaged by fire," President Bush said in Oregon four years ago after touring damage from the Biscuit fire. He called it "common sense."

Common sense, though, may not always be sound science. An Oregon State University study has raised an extraordinary ruckus in the Pacific Northwest this winter by saying that logging burned forests does not make much sense.”

“In Fire's Wake, Logging Study Inflames Debate”

By Blaine Harden, staff writer

Published in the *Washington Post*, February 27, 2006

<http://www.washingtonpost.com/wp-dyn/content/article/2006/02/26/AR2006022601287.html>

FS Response: duplicate link, already responded.

Post Wildfire Logging Opposing View – “The 2003 Lost Creek fire burned 21 000 ha of forested land in the Oldman River basin, Alberta, Canada. Seven watersheds, with varying degrees of natural and man-made land disturbance (burned, post-fire salvage logged, unburned) were monitored for three years to assess sediment concentrations and production (export and yield) over a range of flow regimes (spring melt, baseflow and stormflow). Suspended sediment concentrations were 6-times higher in burned watersheds and 11-times higher in post-fire salvage logged watersheds than in unburned watersheds. Sediment availability was greater in both burned and post-fire salvage logged watersheds but varied with flow condition; particularly during the snowmelt freshet and stormflow. In burned watersheds, sediment yield was 5-times higher during snowmelt and 13-times higher during stormflow than in unburned watersheds. Post-fire salvage logging produced much greater impacts than wildfire alone, with mean sediment yield 19-times higher during snowmelt and 9-times higher during stormflow compared to unburned watersheds.”

Impacts of wildfire and post-fire salvage logging on sediment transfer in the Oldman watershed, Alberta, Canada

Silins, Uldis, Ph.D., Michael Stone, Ph.D. Monica Emelko, Ph.D. and Kevin Blandon, Ph.D. Proceedings of a symposium held in Christchurch, New Zealand, December 2008). IAHS Publ. 325, 2008
http://fews.forestry.oregonstate.edu/publications/Silins_IAHS_2008.pdf

FS Response: The design criteria (Appendix A of the EA) are in place to mitigate negative effects of the proposed action or alternative in combination with nationally developed best management practices designed to protect soils and hydrologic resources. Effects to all resources, economic and natural, can be found in the EA in Chapter 3.

Post Wildfire Logging Opposing View – “It was the conventional wisdom that salvage logging and planting could reduce the risk of high-severity fires,” said Jonathan R. Thompson, a doctoral candidate in forest science at Oregon State, who was lead author of the study appearing this week in Proceedings of the National Academy of Sciences. “Our data suggest otherwise.”

They suggested that the large stands of closely packed young trees created by replanting are a much more volatile source of fuel for decades to come than the large dead trees that are cut down and hauled away in salvage logging operations.

Salvage Logging, Replanting Worse

Published by the Associated Press, June 12, 2007

<http://www.enn.com/wildlife/article/6729>

FS Response: Article on environmental website summarizing the argument against salvage logging, and stating that post fire salvage doesn't reduce the risk of high-severity fires. The purpose of this project is to capture economic value from trees affected by the fire. The design criteria (Appendix A of the EA) are in place to mitigate negative effects of the proposed action or alternative in combination with nationally developed best management practices designed to protect soils and hydrologic resources. Effects to all resources, economic and natural, can be found in the EA in Chapter 3.

Post Wildfire Logging Opposing View – “Salvage logging, or post-fire logging, is a long practiced yet scientifically unsupported method of forest management. Often cited as a necessary management tool for aiding in forest restoration following a wildfire, salvage logging can actually accomplish the opposite result by increasing the fire hazard, degrading water quality, and impairing the habitat and ecological function of the forest.”

“The Forest Service and private timber companies often advocate on behalf of “salvaging” dead and dying standing trees for their commodity value following a wildfire event. Post-fire logging extracts these merchantable burned trees and leaves behind the smallest trees which happen to have little commercial value and increase the fire danger.”

“Post-fire logging also disrupts natural ecological processes, threatens the habitat of wildlife species, and reduces water quality. Post-fire logging hinders forest regeneration and restoration by compacting soils, damaging riparian corridors, introducing and spreading invasive species, causing erosion, adding sediment to streams, degrading water quality, and removing trees utilized for habitat.”

Salvage Logging

A Sierra Forest Legacy publication, 2012

http://www.sierraforestlegacy.org/FC_FireForestEcology/FFE_SalvageLoggingScience.php

FS Response: Duplicate link, already responded.

Post Wildfire Logging Opposing View

“Myth 1 — Fire is catastrophic, and forests cannot recover by themselves. -- This fire-created web of life soon rivaled what we see in the much-celebrated old-growth forests.

Myth 2 — Post-fire landscapes will become brush fields unless salvage logged and planted with conifers. -- Conifer seedlings are crushed as logs are dragged uphill, heavy machinery compacts fragile soils, large snags that shade seedlings are removed for economic value, and invasive weeds are transported by logging machinery.

Myth 3 — Salvage logging reduces fuel hazards and future fire risks. -- The small twigs and branches left by loggers provide kindling for the next fire while the big charred trees that are least likely to burn again are taken away.

Myth 4 — Salvage logging is needed to prevent global warming pollution released by burning vegetation. -- Salvage logging takes away what plants and wildlife need most after fire — large dead and live trees — and pollutes waterways from sediment runoff along roads and from logging on steep slopes.

“Hillsides covered with old and new forests produce clean air, drinking water, salmon, abundant wildlife and a quality of life that is essential to attracting new businesses and the variety of jobs they are bringing to our region.”

Why Our Forests Need Fire, Not Salvage Logging

By DellaSala Dominick A., Ph.D.

Published by Island Press, December 13, 2013

<https://www.islandpress.org/node/637>

Note: Dominick A. DellaSala is Chief Scientist and President of the Geos Institute in Ashland, Oregon, and President of the North American section of the Society for Conservation Biology.

FS Response: Article regarding effects from fire on the landscape. The Forest Service acknowledges the benefits of fire on the landscape. The purpose of this project is to capture economic value from trees affected by the fire. The design criteria (Appendix A of the EA) are in place to mitigate negative effects of the proposed action or alternative in combination with nationally developed best management practices designed to protect soils and hydrologic resources. Effects to all resources, economic and natural, can be found in the EA in Chapter 3.

Post Wildfire Logging Opposing View – “The Biscuit Fire of 2002 burned more severely in areas that had been salvage logged and replanted, compared to similar areas that were also burned in a 1987 fire but had been left to regenerate naturally, a new Oregon State University Study concludes.”

An Oregon State University Publication, June 12, 2007

FS Response: Article about natural recovery vs. salvage logging. The purpose of this project is to capture economic value from trees affected by the fire. The design criteria (Appendix A of the EA) are in place to mitigate negative effects of the proposed action or alternative in combination with nationally developed best management practices designed to protect soils and hydrologic resources. Effects to all resources, economic and natural, can be found in the EA in Chapter 3.

“Ecological damage caused by post-disturbance logging may outweigh short-term economic benefits. If conducted improperly, timber harvest of any kind damages soils and below-ground processes, spreads invasive species, increases sediment delivery to streams, and destroys or degrades key environments for terrestrial and aquatic species. With post-disturbance logging, however, these impacts occur when forest recovery is most vulnerable to the effects of additional, especially anthropogenic, disturbances, creating cumulative effects not associated with logging in undisturbed forests. Such effects can extend for a century or more.”

Post-Fire Logging Debate Ignores Many Issues

https://www.researchgate.net/publication/6770694_Post-Fire_Logging_Debate_Ignores_Many_Issues

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Post Wildfire Logging Opposing View – “Recently-released studies point to the crucial importance of burned-over habitat for many species, including the [Pacific fisher](#) and [black-backed woodpecker](#). Despite this, Congressional Republicans are pushing two bills, supported by the timber industry, that would speed up logging in national forests after wildfires and reduce environmental review.”

“The ecological importance of large mixed-intensity fires is clear -- they help produce a mosaic of habitat types, and patches that burn at high intensity, where most or all of the trees are killed, become “[snag forests](#),” one of the rarest but most ecologically vital habitat types, says Chad Hanson, director of the [John Muir Project](#), a nonprofit group that opposes salvage logging.”

“Salvage logging short circuits the post-fire rejuvenation process, many studies show, removing the snags and downed trees that create shade and shelter. Heavy machinery can destroy regenerating conifers and other plant life and create erosion, while herbicides prevent the growth of beneficial shrubs and forbs. Hanson describes it as “kicking the forest when it’s down.”

In response to the current salvage-logging bills, last month he and more than 260 other scientists [sent a letter](#) to President Barack Obama and the Senate, stating that the bills “misrepresent scientific evidence” and “post-fire habitats created by fire, including patches of severe fire, are ecological treasures rather than ecological catastrophes, and that post-fire logging does far more harm than good to public forests.” “

Congress tries to speed up contentious post-fire logging

By Peterson, Jodi

Published by *High Country News*, October 15, 2015

<http://www.hcn.org/articles/congress-tries-to-speed-up-contentious-post-fire-logging>

FS Response: Article outlining new (at the time) legislation and the impacts to forest health. The proposed action focuses on areas in matrix land allocations (suitable for timber harvest) (approximately 25,386 matrix acres within the project area) and further refined to only those acres which endured approximately 50-100 percent basal area loss. Further analysis refined the proposed action acres to 4,090 by “*removing units lacking economically viable products, logging systems operability and accessibility, locating and avoiding unmapped riparian reserves, and considerations for post-fire wildlife habitat and other resources.*” (EA at 1-1) The proposed action could potentially affect about 16% of the matrix lands within the project boundary, and could affect 30% of the matrix lands that fell into the 50-100 percent basal area loss. On a larger scale, the proposed action would affect only 2% within the fire perimeter that overlaps with Forest Service land.

Post Wildfire Logging Opposing View – “We do not need to be afraid of the effects of fire in forest ecosystems of the western United States. Wildland fire is doing important and essential ecological work. It is keeping countless wildlife species alive. Our challenge, in the new and emerging paradigm, is to make certain that homes are protected so that we can allow wildland fire to do its vital and life-giving work in our forests. In short, we need to stop our futile battle against wildland fire and learn to live well with fire, reminding ourselves that western U.S. conifer ecosystems evolved with fire and are adapted to it. Excluding fire from these ecosystems is like trying to keep rain out of a rainforest.”

The Myth of “Catastrophic” Wildfire -- A New Ecological Paradigm of Forest Health

Hansen, Chad Ph.D.

John Muir Project Technical Report 1 • Winter 2010

<http://www.wildcalifornia.org/wp-content/uploads/2013/01/TheMythofCatastrophicWildfire.pdf>

FS Response: Technical report developed for environmental group. The proposed action focuses on areas in matrix land allocations (suitable for timber harvest) (approximately 25,386 matrix acres within the project area) and further refined to only those acres which endured approximately 50-100 percent basal area loss. Further analysis refined the proposed action acres to 4,090 by *“removing units lacking economically viable products, logging systems operability and accessibility, locating and avoiding unmapped riparian reserves, and considerations for post-fire wildlife habitat and other resources.”* (EA at 1-1) The proposed action could potentially affect about 16% of the matrix lands within the project boundary, and could affect 30% of the matrix lands that fell into the 50-100 percent basal area loss. On a larger scale, the proposed action would affect only 2% within the fire perimeter that overlaps with Forest Service land.

Post Wildfire Logging Opposing View – “This is a lesson for USFS employees (with many pictures) who still think its important to sell dead and dying trees in a post-fire landscape before the trees rot and loose value. Of course logging this rare and important habitat to provide corporate profit opportunities is something an intelligent, professional, caring USFS employee would never consider.”

Protection of Post-Fire Habitat

Published by the John Muir project, 2014

<http://johnmuirproject.org/forest-watch/post-fire-habitat/>

FS Response: Website with a collection of photos from previous burns. No response required.

Post Wildfire Logging Opposing View –"We bring these pejorative perspectives to our thinking about forests. In particular, some tend to view dead trees as a missed opportunity to make lumber. But this really represents an economic value, not a biological value. From an ecological perspective dead trees are the biological capital critical to the long-term health of the forest ecosystem. It may seem counter-intuitive, but in many ways the health of a forest is measured more by its dead trees than live ones. Dead trees are a necessary component of present forests and an investment in the future forest."

"Who could have foreseen immediately after the forest had burned 60 years before that the dead trees created by the wildfire would someday be feeding grizzly bears? But dead trees are a biological legacy passed on to the next generation of forest dwellers including future generations of ants and grizzly bears.

Dead trees have many other important roles to play in the forest ecosystem. It is obvious to many people that woodpeckers depend on dead trees for food and shelter. In fact, black-backed woodpeckers absolutely require forests that have burned. Yet woodpeckers are just the tip of the iceberg, so to speak. In total 45% of all bird species depend on dead trees for some important part of their life cycle. Whether it's the wood duck that nests in a tree cavity; the eagle that constructs a nest in a broken top snag; or the nuthatch that forages for insects on the bark, dead trees and birds go together like peanut butter and jelly."

Praise the Dead: The Ecological Values of Dead Trees

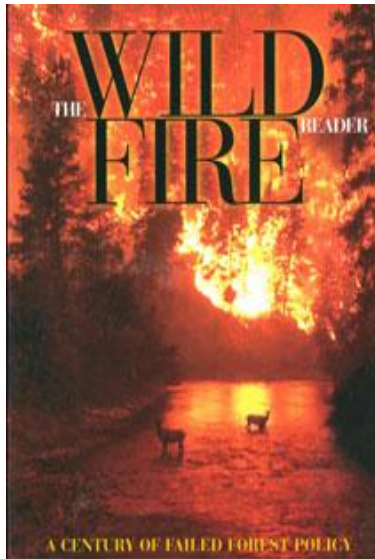
By George Wuerthner, author and ecologist

Published at the Friends of the Clearwater website

<http://www.friendsoftheclearwater.org/praise-the-dead-the-ecological-values-of-dead-trees-by-george-wuerthner/>

FS Response: Opinion, no response needed.

There might be a few of you with the courage to remove your USFS blinders and read the truth about fire. George Wuerthner is an expert.



Here is a reader review written by a man who has forgotten more than some so-called USFS fire “experts” know:

Contrary to Smokey T. Bear, fire is an integral part of healthy ecosystems. The biggest problem with wildland fire is suppression, not burning. After a century of aggressive fire suppression and the myth of Smokey T. Bear, we now see clearly that fire is integral just as soils, sun, wind, water, insects, snow, ice and other natural processes. Put an increment borer into a tree and you can read the fire history of an ecosystem back up to 3,000 years.

Core into soils, meadows and adjacent streams and you can often retrace almost 10,000 years of fire history in the sediments, buried logs and stumps. Learn the behavior of wildland fire in the presence of sun, upslope wind, rain, snow, clouds, humidity, katabtic winds and air temperature and you begin to catch a glimpse of how we have artificially imposed politics, wishful thinking and pseudoscience on wildland ecosystems.

Media and politicians speak of "catastrophic" and "charred" ecosystems, but fail to speak of the catastrophe of sprawling urban development imposed upon fire-maintained vegetation and soils. We live in wood houses with wood shake roofs and wonder why our houses burn when the surrounding air super heats.

We have made many mistakes with fire. The first mistake is labeling wildland ecosystems uninhabited "wilderness". As Kat Andersen reminds us in "Before The Wilderness," this was never wilderness, people have always lived here AND used fire as a tool to maintain healthy ecosystems for more than 10,000 years.

It was the European invasion that labeled fire as "bad" and Disney and Bambi who drove the message home. It is only through the dedicated work of scientists and wildland managers in

places like Sequoia-Kings Canyon, Yosemite and Yellowstone Natl Parks since 1970 that we have begun to understand the basic role of fire. The Leopold Commission in the early 1950s clearly identified the potential for large fires from all the biomass that was and continues to build up.

There is still a large residue who label fire as "bad," and don't understand the role of fire in healthy, resilient, durable ecosystems. Air Quality districts now impose their mandates on when to burn. This book is a must for the public, resource managers and urban residents.

Its available at Amazon:

https://www.amazon.com/Wildfire-Reader-Century-Failed-Forest/dp/1597260878/ref=sr_1_2?ie=UTF8&qid=1518063856&sr=8-2&keywords=The+Wildfire+Reader#customerReviews